General Comments:

This is a very well written paper. The points authors wanted to demonstrate are very clear. The main point of this paper is to demonstrate how to use a simplest 2-D setup to understand the advection problem for steep sites with complex topography. Advection problem is complicated and site-specific. The data collected and analysis conducted by Etzold et al. at the Lageren research site are valuable in a different angle of viewing the complicated advection problem. This is my second time to review this paper. This version has been improved a lot, especially in the discussion of horizontal advection. I recommend publishing this paper with minor revisions.

Specific comments:

Referee #1' suggested the paper for publication with two major requirements: 1) to clarify if their findings are empirical, or they follow a physical principle, in order to understand in which perspective their simple set-up could be applied at other sites to correct for advection; 2) to point out the limits, in terms of accuracy and precision, related to the simplifications introduced in their set up, including representativeness of horizontal sampling points, and computations. Here major concern is if the 2 m-layer integral of horizontal advection flux represents the whole horizontal advection flux. I think that this can be solved by two possible ways.

(1) A simple way is to use F_{HA2m} as suggested by referee #1 denoting horizontal advection in 2 m-layer instead of using F_{HA}. All discussions would be valid except changing your statements from quantitative into qualitative. F_{HA2m} represents the lower end of whole advection flux because $F_{HA2m} < F_{HA}$ since $U_c > 0$ and $\partial \overline{c} / \partial x > 0$ always at nighttime. We can believe that F_{HA2m} is a large portion of F_{HA} but hard to believe that they are equal because $u_c \partial \overline{c} / \partial x$ is always positive within canopy layer (30m). All features (or discussions) performed by F_{HA2m} is valid for F_{HA} qualitatively. In this way, the explanation for the agreement between u* correction and F_{HA2m} correction should be different, i.e. u* correction is underestimate if $F_{HA2m} < F_{HA}$.

(2) An alternative way is a state of the art approximation. I guess that there is a superstable layer (Yi, 2008) located between 5 m and 9 m based on Figure 5a and 5b because the Richardson number

$$Ri = \frac{\frac{g}{\theta_0}\frac{\partial T}{\partial z}}{\left(\frac{\partial u}{\partial z}\right)^2} \to \infty ,$$

since $\partial u / \partial z = 0$ (Figure 5a) and $\partial T / \partial z \neq 0$ (Figure 5b). Below the superstable layer, air is relatively neutral (Yi et al., 2005) as demonstrated by Figure 5b. Therefore, you can assume that horizontal CO2 gradients are constant within 5 m layer (Yi et al., 2008).

Thus, you can calculate horizontal advection for the 5 m layer and use it as an approximation of whole horizontal advection flux.